

western Transvaal, western Rhodesia, western and southern Zambia, and Angola. Extralimitally over rest of species' mainland range, and to Arabia and Socotra.

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Notes on African warblers of the genus *Chloropeta* Smith

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Scattered notes on members of the genus *Chloropeta* Smith, made by the authors in various parts of Africa, are here brought together in one article for convenience. The notes from Zambia were made on trips made possible through the kindness of Mr. C. W. Benson, recently of the Livingstone Museum, Livingstone, Zambia. To him we here record our thanks.

Chloropeta gracilirostris bensoni Amadon

Although this species has been known from Lake Mweru since 1938, this population was not described as a separate race until 16 years later when Amadon (1954) named it on the basis of a series taken by Benson in September 1953 at the mouth of the Luapula River at the southern end of Lake Mweru.

We have referred briefly elsewhere (Keith and Vernon) to our experiences with this bird by the Luapula River on 8th December, 1964. We were unable to collect any birds due to the depth of the water and the dense nature of their papyrus habitat, but numerous tape recordings were made of the song, of which the four most representative are reproduced here. (See illustration on p.119)

The song consists of a series of short phrases (maximum duration of any one phrase, 0.7-0.8 seconds), uttered at irregular intervals, in a manner somewhat reminiscent of the New World vireos (Vireonidae). The birds had a tendency to take one phrase and repeat it a number of times before going on to the next phrase, which they would likewise repeat. The song has a plaintive quality, and is rather weak compared to the boisterous outbursts of *Calamocichla rufescens nilotica* Neumann, which was singing in the same papyrus beds. For comparison, a single phrase of the latter's song is reproduced here (example E); the song is loud and guttural, and phrases lasting several seconds are common.

It may be of interest to record here that Keith also recorded *Calamocichla rufescens foxi* (Sclater) at Lake Bunyoni in Uganda in 1962, and he can find no difference at all in the songs of the two races. This would seem to support the conclusions of Chapin (1953) and Pitman (1956) that

foxi is merely a race of *C. rufescens*. This is in opposition to the view of M.-Praed and Grant (1955), who accord *foxi* specific status.

The phrases of *Chloropeta gracilirostris* depicted in the sonagrams may be rendered as follows:

- A. To-t slo-wee
- B. Tee-tschlee-wo
- C. Tslo-tschlee-wo
- D. Tschlee-ow

With these renderings we have tried to convey something of the sibilant quality which characterises all the phrases. Phrase D is a compressed version of phrase C. Benson (1956, p. 19) describes a phrase heard at the Luapula mouth, which he attributes to this species, as "a musical 'pee, p-r-r-r-' ('ee' as in 'sweet')". This description seems closest to phrase B. Chapin (1953, p. 451) describes the song of the nominate race, heard at Lake Bunyoni, Uganda, as follows: "a short series of loud-half-whistled notes, decidedly variable but high-pitched and usually of 'chwee-chwee-chwee . . .' nature". This description does not really fit any of my phrases, but seems closest to C and D.

This species is a seasonal and erratic singer, which, together with its skulking habits, render it difficult to see, and it is probably frequently overlooked. Benson did not hear it at the Luapula mouth in September, but did hear it on another visit in February. Chapin heard the song at Lakes Edward, Bunyoni and Mutanda in April and May, 1927, but Keith neither heard the song nor saw any birds at these same lakes in June, 1962. John Williams, in a letter to Keith, states that he has never seen the species, though he has looked for it often at these two lakes in Uganda.

The generic status of this species has been open to some doubt. The type was placed in *Chloropeta* by Ogilvie-Grant, and has been so retained by most authors. Grant and M.-Praed (1940), however, noted that in a number of characters the bird agreed more closely with *Calamocaetor* (*sic*) (= *Calamocichla*) than with *Chloropeta*, so they proposed a separate genus, *Calamonastides* for it. They called attention to the large feet and the swamp habitat, features which it shares with *Calamocichla*; on the other hand, the olive-brown and yellow coloration and somewhat broader bill indicate relationship to *Chloropeta*.

Keith measured series in the A.M.N.H. collection of *Chloropeta gracilirostris*, both races, *C. natalensis*, *C. similis*, and *Calamocichla rufescens nilotica* (see Table). It can be seen that both *C. similis* and *C. natalensis* have much broader bills than *C. gracilirostris*, a point not noted by Grant and M.-Praed. On the other hand, bill proportions of *Cal. r. nilotica* and *Chl. gracilirostris* are almost identical: in the above specimens, the culmen of *C. r. nilotica* averages 2.76 times bill breadth at base; in *C. g. gracilirostris* the multiple is 2.61. It can further be seen from the Table that the feet of *C. gracilirostris*, as judged by measurements of the hind and middle toes, are proportionately much larger than those of *natalensis* and *similis*.

TABLE
Comparison of bill and foot measurements of *Chloropeta* spp.
and *Calamocichla rufescens nilotica*

	Culmen	Breadth of bill at base	Hind toe with claw	Middle toe with claw	Wing
<i>Chloropeta gracilirostris</i> <i>bensoni</i>	15.5	5	17	18	54
<i>Chloropeta g.</i> <i>gracilirostris</i>	16	6.125	19.875	21.625	61.5
<i>Chloropeta</i> <i>natalensis</i>	16.625	8.375	14.125	15.125	60.75
<i>Chloropeta</i> <i>similis</i>	16.625	7.75	14.375	15	59.5
<i>Calamocichla</i> <i>rufescens nilotica</i>	23.5	8.5	24.25	26.75	76.5

Bearing in mind the above, we were very interested to see whether the song of *C. gracilirostris* could give any clue to its relationships. To make a proper judgment one would need a much larger series of sonagrams than we have here presented, including the songs of *Chloropeta natalensis* and *similis*, and other members of the genus *Calamocichla*. Our opinion is therefore subjective, but we are familiar with the songs of *natalensis* and *similis*, and also with *Calamocichla* spp. and many of the closely related acrocephaline warblers (White, 1952, merges *Calamocichla* in *Acrocephalus*). There is little doubt in our minds that on the basis of song, *gracilirostris* belongs in *Chloropeta* rather than in *Calamocichla*. Except for *Acrocephalus palustris*, all the species of *Acrocephalus* and *Calamocichla* we know have harsh, grating, unmusical songs. It is difficult to characterise the song of "a *Chloropeta*", since *similis* and *natalensis* have songs differing widely in form, but both their songs have a ringing, musical quality about them which is shared by *gracilirostris*. The last is the least musical and simplest of the three, and is closest to *natalensis*. Sclater and Moreau (1933) describe the song of *C. natalensis massaica* Fischer and Reichenow from the Usambara Mountains, as "brief, loud and clear. It is a trill preceded by three notes, 'twee, twee, twee'." We find the song has considerable variation, but the general form is of some introductory notes followed by a trill.

The song of *Chloropeta similis* is quite different and of a far superior quality, the notes being sweet, liquid, and melodious. The song is slow, deliberate, and very variable. High notes alternate with low ones, and there is often a trill in the middle; these two features make the song reminiscent of that of the American song sparrow, *Melospiza melodia*. A song heard by Keith on Mt. Kenya might be rendered "chee, chee, chu, chu, tsee-jujuju-woo".

Natalensis and *similis* have quite different styles of singing. *Natalensis* selects a perch and sings from it, whereas *similis* sings while on the move, pausing as it works its way among the bushes. Chapin (1953, p. 453) notes of *similis* that "The birds flit about in the shrubbery more like warblers than like flycatchers", and together with its size and yellow and green coloration *similis* reminds one very much of a *Phylloscopus*. *C. gracilirostris* has a similar style of singing; it does not have a regular singing perch, but sings as it moves about low down in the papyrus. This characteristic it also shares with *Calamocichla* spp.

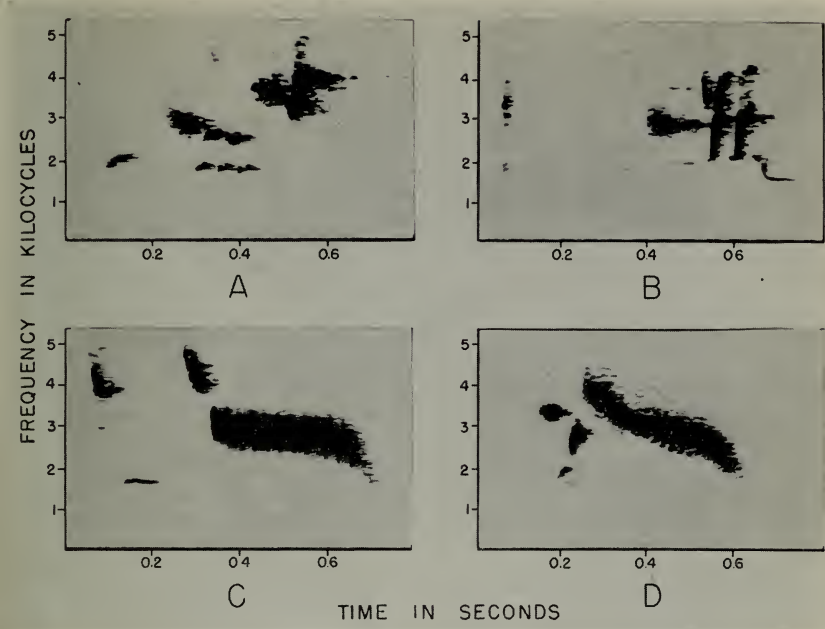
In conclusion, in spite of the subjective nature of the evidence, we would say that the song of *gracilirostris* tends to support the view of Chapin (1953), Amadon (1954), and Hall and Moreau (1962) that it should be retained in the genus *Chloropeta*.

Comparison of habitat and nests of Chloropeta natalensis and C. similis

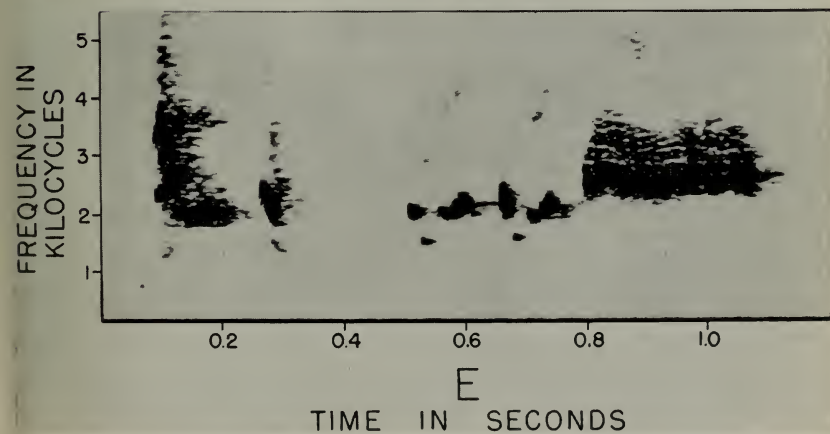
The following notes on habitat and nests of *C. similis* and *C. natalensis* were made by Vernon at the edge of the Nyika Plateau in Zambia, near the Malawi border, in January, 1964.

Habitat

C. similis: Rank clearings in forest, edges of forest patches, patches of bracken-briar, and rank growth along streams. Altitudinal range, 6,600–7,800 ft., and probably higher still.



Four phrases of the song of *Chloropeta gracilirostris bensoni*



Single phrase from the song of *Calamocichla rufescens nilotica*

C. natalensis: Inhabits rank grasslands below the plateau, penetrating up the streams running off the plateau to an altitude of 6,700 ft. It thus just overlaps with *C. similis*, and its habitat at the point of overlap is the same, *i.e.* patches of bracken-briar and the rank growth along streams. At one point the two species were found nesting 50 yards apart, in the same habitat.

Nests

A total of 6 nests were found, 2 occupied nests of *C. similis* and 1 occupied and 3 unoccupied nests of *C. natalensis*. The nests of the two species were dissimilar; those of *C. similis* were much bulkier, external measurements being 4 in. across and 4 in. deep, as opposed to 3 in. across and 3 in. deep for *natalensis*. Internal nest measurements were fairly similar, except that nests of *similis* were slightly deeper.

A nest of *similis* critically examined was made of broad grass blades, seed heads of grasses (*Panicum* spp.), mixed with finer grass, feathers, coarse and fine fern ramenta, and moss (*Brachythecium impucatum*). It was bound on the outside with cobwebs. Included also was an unidentified non-botanical fibre resembling fine, green nylon wool. As the nest was not far from the Nyika resthouse, this probably came from human clothing. There was an inner lining of feathers and the fine branches of *Thalictrum rhynchocarpum*.

A nest of *natalensis* similarly examined was built of broader grass blades bound with cobwebs, and was also lined with branches of *Thalictrum rhynchocarpum*, but no feathers, fern ramenta, or moss were used.

Details of the two occupied nests of *C. similis* referred to above including a description of the eggs, can be found in Benson and Pitman (1966). They did not mention the nest of *C. natalensis* found at the same time, so we record it here. Date, January 10, 1964; c/2, nest placed two feet up in bracken, on a small bushy mound beside a boggy stream. Nyika Plateau, Malawi, alt. 6,300 ft.

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